Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Hour: \_\_\_\_\_\_\_

**Trimester 2 Study Guide**

**Variables, Constants, and Controls**

**Directions:** Identify the independent and dependent variables in the following hypotheses.

Hypothesis: If I give a plant fertilizer, then it will grow bigger.

1. Independent Variable (I.V.): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (1pt.)
2. Dependent Variable (D.V.): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (1pt.)

Hypothesis: If a person drinks more soda pop, then they will be more likely to get diabetes.

1. Independent Variable (I.V.): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (1pt.)
2. Dependent Variable (D.V.): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (1pt.)

Hypothesis: If you get less than 7 hours sleep, then your test scores will go down.

1. Independent Variable (I.V.): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (1pt.)
2. Dependent Variable (D.V.): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (1pt.)

**Directions:** Identify the independent and dependent variables, two constants, and the control group in the following experiment.

Experiment:

Dr. Smith wants to examine whether a new drug increases the maze-running performance of older rats. Just like aging humans, older rats show signs of poorer memory for new things. Dr. Smith teaches two groups of rats to find a piece of tasty rat chow in the maze. One group of rats is given the new drug while they learn the maze. The second group is not given the drug. One week later he retests the rats and records how long it takes them to find the rat chow.

1. Independent Variable (I.V.): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (1pt.)
2. Dependent Variable (D.V.): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (1pt.)
3. Constant (choose one): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (1pt.)
4. Constant (choose another): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (1pt.)
5. Control Group: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (1pt.)

**Genetics Vocabulary**

**Directions:** Read the statements below and circle the best choice. (1 pt. each)

1. A recessive allele:  **G** or  **g**
2. A dominant allele:  **G** or  **g**
3. A homozygous genotype: **GG** or  **Gg**
4. A heterozygous genotype: **GG** or  **Gg**
5. A homozygous dominant genotype: **GG** or  **Gg** or  **gg**
6. A homozygous recessive genotype: **GG** or  **Gg** or  **gg**
7. Characteristics determined by genes: **Traits** or **DNA**
8. Which is shown/written with words: **Genotype** or **Phenotype**
9. Segments of DNA that code for traits: **Genes** or **Chromosomes**

**Sexual vs. Asexual Reproduction**

**Directions:** Read the statements below and circle the best choice. (1 pt. each)

1. Offspring (babies) are clones of parent:  **Sexual** or **Asexual**
2. DNA from 1 parent is copied for child: **Sexual** or **Asexual**
3. Sperm and Egg carry DNA from 2 parents: **Sexual** or **Asexual**
4. Offspring are different from parents:  **Sexual** or **Asexual**

**Genes vs. Environment (Nature vs. Nurture)**

**Directions:** Read the statements below and circle the best choice. (1 pt. each)

1. Two human parents have a baby boy: **Genes** or **Environment**
2. A puppy is born with a long curly tail: **Genes** or **Environment**
3. A man gets lung cancer from smoking: **Genes** or **Environment**
4. A girl’s skin darkens after being in the sun: **Genes** or **Environment**

**Genetic Engineering (GE) vs. Artificial Selection (AS)**

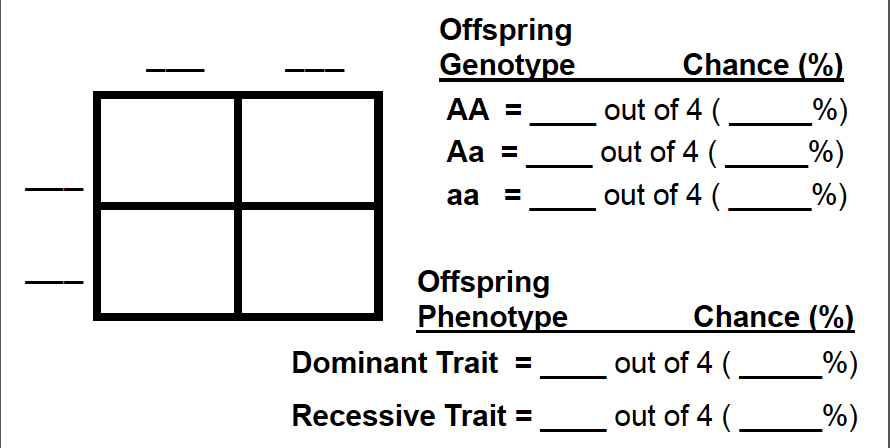
**Directions:** Read the statements below and circle the best choice. (1 pt. each)

1. The creation of dog breeds (ex. the Golden Retriever): **GE** or **AS**
2. Making corn that is resistant to insects eating it: **GE** or **AS**
3. Adding genes from one organism to the DNA of another: **GE** or **AS**
4. Creating tomatoes that don’t spoil as quickly:  **GE** or **AS**
5. Repeatedly breeding foxes that are friendly to tame them: **GE** or **AS**

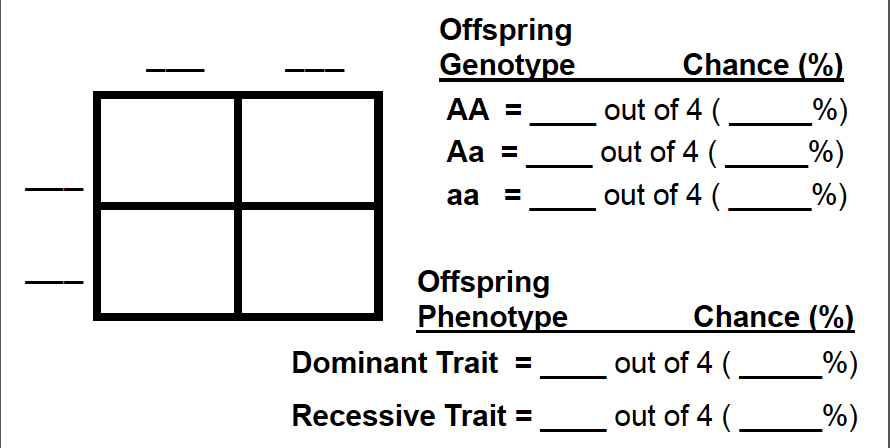
**Punnett Squares**

**Directions:** Complete the Punnett Squares and percentages based on the parent information given for each question. (2 pts. each)

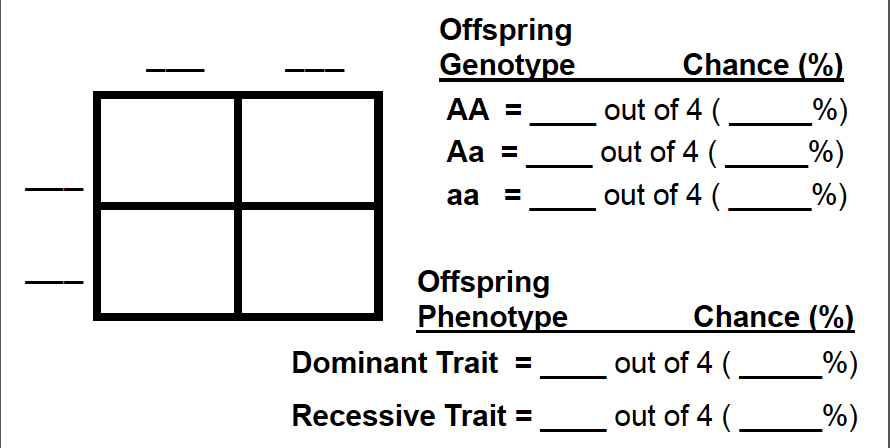
1. Parents: **AA** and **aa**



1. Parents: Both **heterozygous** (use “A” and/or “a”).



1. Parents: One **heterozygous** parent and one **homozygous recessive**.



|  |  |  |
| --- | --- | --- |
|  | **Allele** | **Trait** |
| Neck length | A | Long |
| a | Short |
| Fur color | R | Orange |
| r | Yellow |
| Head shape | D | Round |
| d | Pointy |
| Eye color | R | Brown |
| r | Blue |

37-40. Fill in the blanks below using the chart above. (1 pt. each)

|  |  |  |
| --- | --- | --- |
|  | **Genotype** | **Phenotype** |
| Neck length | AA | 37. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Fur color | 38. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Yellow |
| Head shape | dd | 39. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Eye Color | 40. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Brown |

**Bonus:** Draw a picture of what the organism might look like based on the traits above.